

VI. REMARKS

The Examiner is thanked for extending the courtesy of a telephone interview on April 4, 2005, during which it was disclosed that the Brown reference is missing. Accordingly this reference is enclosed herewith. Also enclosed is a copy of the docket receipt postcard, which states that "references" were enclosed.

The abstract and description have been amended as requested. Thus, they are no longer objectionable.

It is respectfully submitted that a preliminary amendment was filed December 8, 2000 with the original application which eliminated multiple dependency. Thus claims 6-8, 17, 21, 26-28 and 32 are not objectionable and an action on the merits is requested. It is also submitted that it would be improper to make the next office action a final rejection.

Claims 1-5, 9-16, 18, 19, 22-25 and 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blanchard in view of Shen and Freed.

Blanchard discloses an apparatus for despread and demodulating a burst CDMA signal. The apparatus comprises a multichannel despreader which generates a plurality of despread signals. In the receiver, the received signal is down converted and input to the multichannel despreader. Each despread signal is generated in the multichannel despreader by correlating the down converted input signal by a plurality of desreading sequences. The desreading sequences have a different phase corresponding to different timing offsets of the spreading code

phase corresponding to different timing offsets of the spreading code phase of the input signal. If the received input signal contains a component that is in the phase with one of the despreading sequences, then a correlation peak will occur at its corresponding channel output. The received signal may contain multiple components corresponding to different code phases due to transmitter filtering, multipath and receiver filtering. Each output of the multichannel despreader is connected to one demodulator of a plurality of demodulators. The demodulators perform demodulation operation, e.g., by calculating a dot product between correlation level spaced one period apart. Therefore, the demodulators detect phase changes from one bit to the next and signal quality. The outputs of the demodulators provided decisions as to whether a logic 1 or logic 0 bit was transmitted.

There is also a weight calculator which provides a weighted value for outputs of those demodulators which exceed a threshold value. A maximum value M is also defined which means that although more than M outputs of the demodulators exceed the threshold value, only the M largest weighted values will be combined (summed). The combined value is examined by comparing it to a set of thresholds to make a decision of the received value.

Blanchard does not disclose, e.g., that the multiplication is performed between the results of the First Hartley Transform and (the results of) the second Fast Hartley Transform. In Fig. 9 and in the corresponding part of the description (col. 11, lines 6-13) it is disclosed that *"...for each frequency bin supplied from FFT block 124, magnitude block 128 an inverse block 129 calculates the inverse magnitude thereof thereby enabling*

multiplier 126 to multiply each frequency bin by the inverse of its magnitude and providing an output to multiplier 130. It is understood that magnitude block 128 and inverse block 129 essentially makes all the frequency bins equal in magnitude, and thus, performs a frequency whitening function." (emphasis added). This is different from what is claimed in claim 1 although the FFT were replaced with FHT. Therefore, the (Fast) Hartley Transform is not the only difference between the present invention and Blanchard. Further, the system of Blanchard does not teach the acquisition step of claim 1 in which the frequency shift and code phase are acquired on the basis of the inverse Hartley transforms of the multiplication results. Although the Examiner argues that Figures 1 and 9 disclose such feature, it can be seen from the description on col. 3, lines 10 to 37, that the N demodulators demodulate the output signals of the multichannel despreaders 20, i.e., demodulate the information transmitted in the signal. This is quite different from the acquisition step of claim 1 of the present invention.

As Blanchard is silent about using Hartley transforms, the Examiner has cited Shen and Freed. Shen discloses methods and apparatus for performing complex channel gain estimation from a transformer output and a non-coherent combiner output. The apparatus includes a selector, an envelope detector, a weighting unit, a controller, store units, and an averager. The apparatus may perform coherent complex channel gain estimation on link signals which is effective for signals transmitted by IS-95 burst randomization, and may operate on a power control group.

The I- and Q- components of the received signal are applied to a despreaders which decorrelates the PN-code from the received signals. The output of the despreaders is orthogonal codes in

complex form (i.e. Walsh codes). A transformer coupled to the output of the despreaders operates in the I- and Q-phase components of the orthogonal signal using a fast Hadamard Transform (a kind of DFT). As another example of the transform function, Shen mentions *inter alia* the Hartley Transform, but not the Fast Hartley transform. The output of the transformer is the complex orthogonal spectrum with M-ary complex values, where M is an integer.

There is also a delay unit coupled to the transformer storing the orthogonal spectrums from the transformer for further processing after the channel complex gain estimation is available. A complex gain estimator determines the channel complex gain estimation from the output values of each finger output. Once the complex gain estimation is ready, the delay unit feeds the stored data to a coherent combiner with the corresponding gain estimate.

A non-coherent combiner is also coupled to the output of the transformer performing diversity combining to all branches of the orthogonal spectrum with non-coherent output.

The coherent output performs diversity combining to all branches with coherent output. The coherent combiner output is the real value vector of M elements for M-ary orthogonal modulation.

Freed relates to an additive sound synthesis process for generating realistic sounds. Although the field of the invention of Freed is quite different from the field of invention of the present invention, the Examiner has cited Freed because it mentions the Hartley Transform and the benefits it may have compared to Fourier Transform. Although Freed argues

that Hartley Transform may have benefits compared to Fourier Transform, the benefits are only achieved by using the Fast Hartley Transform instead of the Fast Fourier Transform. Also Freed's expression in the abstract is incorrect: in the comparable systems the transforms are not computed "...at approximately twice the speed..." but the transform computations are completed in the half of time by the Fast Hartley Transformation due to smaller mathematical burden (in some cases). In other words, the speed may be the same but the time needed to accomplish the transform is only half the time needed when using FFT.

The independent claims recite a positioning receiver, the Fast Hartley transform, the Fast Hartley Inverse transform, performing the multiplication between the results of the first and second Fast Hartley transforms, and the acquisition concept. Since even if the references are taken in combination, they do not disclose these features, the rejection of the claims should be withdrawn.

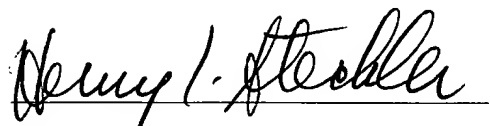
Further, claims 2, 15 and 18 recite that the frequency range is divided into two or more parts and also that a coherent search matrix is formed wherein the coherent search matrix can be examined to determine the frequency shift and code phase. None of the references disclose such features. Thus these claims, as well as their dependent claims, are patentable for this additional reason.

For all of the foregoing reasons, it is respectfully submitted that all of the claims now present in the application are clearly novel and patentable over the prior art of record, and are in proper form for allowance. Accordingly, favorable

reconsideration and allowance is respectfully requested. Should any unresolved issues remain, the Examiner is invited to call Applicants' attorney at the telephone number indicated below.

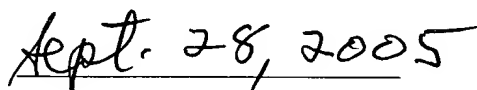
A check in the amount of \$1020.00 is enclosed for a three-month extension of time. The Commissioner is hereby authorized to charge payment for any fees associated with this communication or credit any over payment to Deposit Account No. 16-1350.

Respectfully submitted,



Henry L. Steckler

Reg. No. 24,139



Date

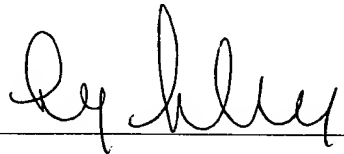
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